

ETRTO status update

- GRBP TF Vehicle Sound -

Measurement uncertainties reduction in rolling sound emission test method in R117

Agenda

- 1 Activity overview on measurement uncertainties reduction**
- 2 Indoor noise test method**
- 3 Noise test track correction**
- 4 Summary**

ETRTO focus on measurement uncertainty reduction in R117

Original three step plan to reduce measurement uncertainty:

1. Temperature correction ✓
2. New **indoor noise test method** for C1 and C2 ✓
3. Full ISO 10844 (*essential characteristics of a test track surface used for measuring rolling sound emissions of vehicles and their tyres*) - ~~revision with unique outdoor test surface~~ ✗

ETRTO does not see a feasible way to introduce a **unique outdoor surface** in the foreseeable future.

4. Embracing the opportunity provided by the **new 17" SRTT tyres**, ETRTO proposes to investigate the possibility of a **noise test track correction** including a test vehicle correction. !

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Status update on indoor noise test development

- ISO 20908 (*tyre sound emission test – methods of drum*) published
- Validation phase running
 - ETRTO **round robin test** for C1 and C2 tyres started with reference to outdoor test measurements.
 - **Unique replica drum surface** manufacturing in progress to assess improvements in “lab to lab” correlation and “track to lab” confirmation.
 - Indoor and outdoor round robin test expected to be completed in Q3 2025.

Round robin test - Reference outdoor test measurements

- Measured at a test track in Spain
 - 15x C1 tyres in seven sizes
 - 5x C2 tyres in two sizes
 - Normal and 3PMSF tyres
 - Including the new 17" abrasion SRTT summer and winter
 - Eight C1 tyres measured both for R117 as well as CRS and ACC at 50 kph

Class	Season	Dimension	Vehicle	ACC
C1	Summer	195/55R16	VW e-Golf	x
C1	Summer	205/55R16	VW e-Golf	
C1	3PMSF	205/55R16	VW e-Golf	x
C1	Summer	205/55R16	VW e-Golf	
C1	Summer	225/45R17	VW e-Golf	
C1	3PMSF	225/45R17	VW e-Golf	
C1	Summer	225/45R17	VW e-Golf	x
C1	3PMSF	225/45R17	VW e-Golf	x
C1	Summer	235/55R19	Q8 e-tron	x
C1	3PMSF	235/55R19	Q8 e-tron	
C1	Summer	255/55R19	Q8 e-tron	
C1	Summer	255/55R19	Q8 e-tron	x
C1	3PMSF	255/55R19	Q8 e-tron	
C1	Summer	275/40R20	Q8 e-tron	x
C1	3PMSF	275/40R20	Q8 e-tron	x
C2	Summer	235/65R16	MB Sprinter	
C2	Summer	235/65R16	MB Sprinter	
C2	3PMSF	235/65R16	MB Sprinter	
C2	Summer	225/75R16	MB Sprinter	
C2	3PMSF	225/75R16	MB Sprinter	

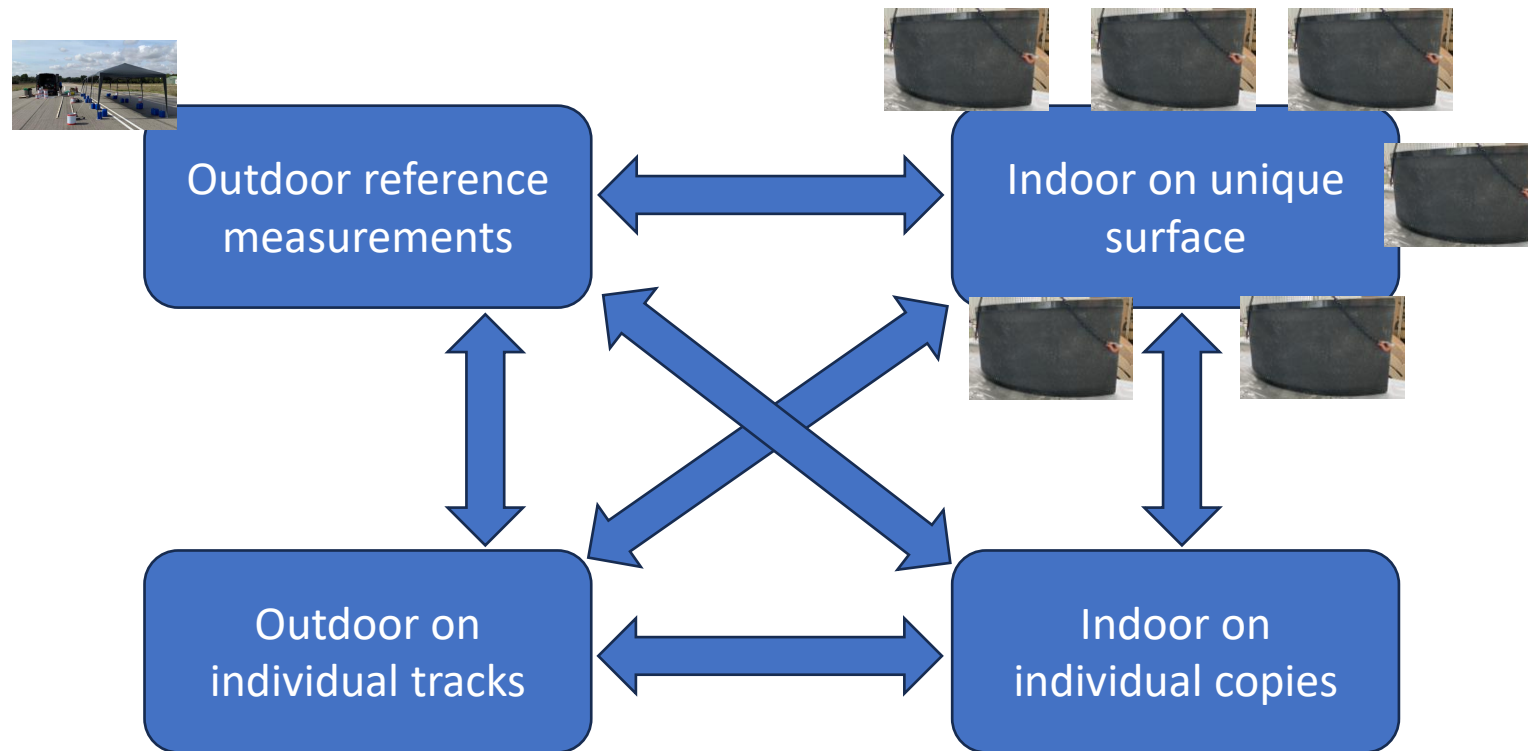
Unique surface manufacturing



Pictures: Hahlbrock GmbH

- Molding of the ISO 10844 test track surface in Spain to create six identical copies for six indoor labs.

Indoor noise test method validation



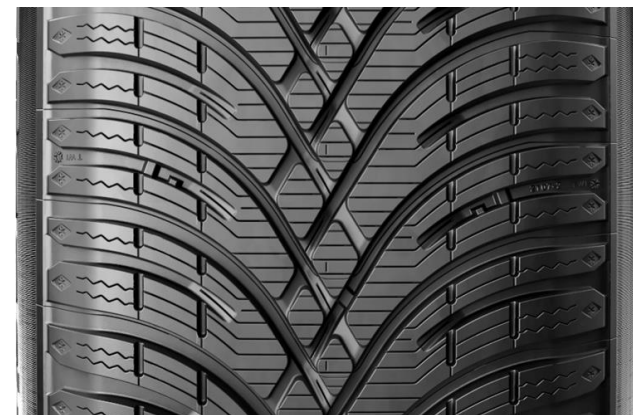
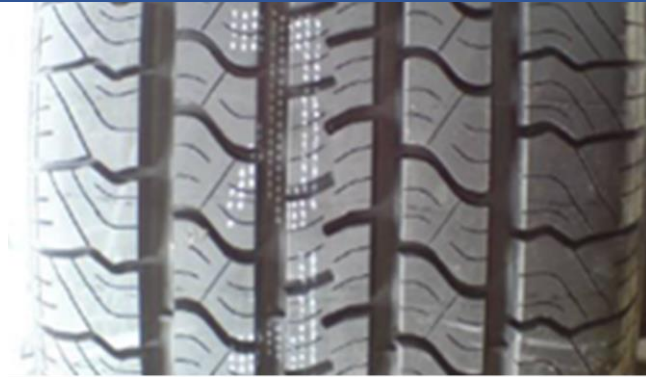
- End 2025 a comprehensive overview of the of the new indoor noise test method and its measurement uncertainty in comparison to the current outdoor test method is expected.

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Noise test track correction

- So far ETRTO did not support noise test track correction proposals based on the 16" SRTT tyre since this was not a commercial product and showed multiple times it's weakness in terms of representativity of its noise behavior.
- The introduction of the new 17" SRTTs creates an opportunity to revisit the idea of a test track correction with the prerequisites that the new SRTTs show a representable noise behavior both for R117 and R51 and provides stable rolling sound performances.



First Pass-by Noise results of the new 17" SRTTs

Summer:

sound level reference speed of 80.0 km/h
 Corr. per run: : false
 L(res, p) : 72.0 dB(A)
L(res) : 71 dB(A)

L _{acc,tyre}	:	65.32 dB(A)
L _{crs,tyre}	:	63.95 dB(A)
25 % L _{crs,tyre} + 75 % L _{acc,tyre}	:	64.98 dB(A)
MISOR-Korrektur	:	0.0 dB(A)
Endergebnis	:	65.0 dB(A)

Winter:

sound level reference speed of 80.0 km/h
 Corr. per run: : false
 L(res, p) : 70.7 dB(A)
L(res) : 69 dB(A)

L _{acc,tyre}	:	66.44 dB(A)
L _{crs,tyre}	:	63.73 dB(A)
25 % L _{crs,tyre} + 75 % L _{acc,tyre}	:	65.76 dB(A)
MISOR-Korrektur	:	0.0 dB(A)
Endergebnis	:	65.8 dB(A)

Proposed next steps

1. Support the start of a dedicated sub-group of TF VS on Noise Test Track correction.
2. Investigate the noise behavior of the new 17" SRTTs.
3. Investigate the test vehicle influence on the outcome of a noise track correction procedure.
4. Prepare working documents for end 2025. A comprehensive overview of the upgraded outdoor test method in R117 and its measurement uncertainty is expected.

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Summary

- End 2025 we can foresee having results for tyres on an improved outdoor noise test method based on a test track correction procedure as well on an indoor noise test method.
- Regarding an outdoor noise test track correction procedure ETRTO would support the initiation of a dedicated sub-group on Noise Track correction in GRBP TF VS framework.

Thank you very much.